Sequence Listing

Applicant Data:

(a) <u>Name</u>: UNIVERSIDADE FEDERAL DO RIO DE JANEIRO E FUNDACAO OSWALDO CRUZ (*FEDERAL UNIVERSITY OF RIO DE JANEIRO AND OSWALDO CRUZ FOUNDATION*)

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Title of the Invention: *PHARMACEUTICAL PRODUCT COMPRISING TRANSGENIC POLLEN EXPRESSING HETEROLOGOUS POLYPEPTIDES*

Number of listed sequences: 4

Seq. nr. 1

Size: 1629 base pairs

Type: cDNA

Name of the gene: AtGRP17

Function: oleosin-type protein

SEQ 1: Complete sequence of the coding region of the AtGRP17 (4940-5358) + (5545-6757)

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                     a tgagcgaaga actaagtcaa aagccatcat cagctcagtc
        4981 tctgtcactg agagagggca gaaataggtt tccttttctg tccctgtcac
agagagaggg
        5041 cagatttttt ccttctctat ctctttcaga gagagatgga agaaagtttt
cttttctcag
        5101 tatgttctct tttctcatgc cactgttgga ggttattaag attattattg
cttctgtggc
        5161 ctccgtaatc ttcgtcggtt tcgcctgtgt aaccctcgct ggttctgccg
cagcattagt
        5221 cgtaagcacc ccggttttca tcatatttag tcctgttctc gtaccagcta
cgatagccac
        5281 ggttgtcttg gcgacaggat tcacggccgg tggctctttt ggagcgacgg
cacttggtct
        5341 catcatgtgg cttgttaagt aagattatta taacagctta tattgagatc
actcgagatt
        5401 tatgcttaat tatataatat tcataaacct atagtttaaa agtatattga
acttcatttg
        5461 ttaacgtact ttataaatat tgaacttcgt tcgttttctt aattggtctc
taagtatata
        5521 tacatacttt tttgtgtgat gcagacgtag gatgggagta aagccgaagg
ataatccacc
        5581 tccggcagga cttccaccga attcgggagc aggagcagga ggagctcaaa
gtctgatcaa                    ì
        5641 aaagtcaaag gcaaagtcta aaggtgggct taaggcttgg tgtaagaaga
tgttaaaaag
        5701 taaattcggt ggtaaaaaag gcaagtccgg gggtggaaaa agtaaatttg
gaggtaaagg
        5761 cggtaagtcc gaaggtgaag aaggtatgtc gtctggggat gaaggtatgt
ctggaagtga
        5821 aggaggtatg tccggaggtg aaggaggtaa atccaaaagt ggaaaaggta
aactcaaagc
        5881 taaactcgaa aagaaaaaag gtatgtccgg agggtccgag agtgaagaag
gtatgtctgg
        5941 aagtgaagga ggtatgtctg gtggtggagg aagtaaatcc aaaagtaaaa
aaagtaaact
        6001 caaagctaaa ttgggaaaga aaaaaggtat gtccggaggc atgtcaggaa
gtgaagaagg
        6061 tatgtctgga agtgaaggag gtatgtccag tggtggagga agtaaatcca
aaagtaaaaa
        6121 aagtaaactc aaagctaaat tgggaaagaa aaaaggtatg tccggaggca
tgtcaggaag
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      6181 tgaagaaggt atgtctggaa gtgaaggagg tatgtccgga ggtggaggag
gtaaatccaa
      6241 aagtagaaaa agtaaactca aagctaaatt gggaaagaaa aaatgtatgt
ccggaggcat
      6301 gtcaggaagt gaaggaggta tgtctggaag tgaaggaggt atatccggag
gtggtatgtc
      6361 tggggggcagt ggaagtaaac acaaaattgg aggaggtaaa cacggaggtc
ttggaggtaa
      6421 attcggaaag aaaagaggca tgtccggaag tggaggaggc atgtcaggaa
gtgaaggagg
      6481 tgtgtctgga agtgaaggaa gtatgtctgg aggtggtatg tctgggggta
gcggaagtaa
      6541 acacaaaatt ggaggaggta aacacggagg tcttagaggt aaattcggaa
agaaaagagg
      6601 tatgtcagga agtgaaggag gtatgtctgg aagtgaagga ggtatgtcgg
aaagtggtat
      6661 gtccgggagt ggaggggggta aacacaaaat cggaggaggt aaacacaaat
ttggaggagg
      6721 taaacacgga ggtggaggtg gccacatggc ggagtaa
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Protein sequence translated from AtGRP17

MSEELSQKPSSAQSLSLREGRNRFPFLSLSQREGRFFPSLSLSE

RDGRKFSFLSMFSFLMPLLEVIKIIIASVASVIFVGFACVTLAGSAAALVVSTPVFII

FSPVLVPATIATVVLATGFTAGGSFGATALGLIMWLVKRRMGVKPKDNPPPAGLPPNS

GAGAGGAQSLIKKSKAKSKGGLKAWCKKMLKSKFGGKKGKSGGGKSKFGGKGGKSEGE

EGMSSGDEGMSGSEGGMSGGEGGKSKSGKGKLKAKLEKKKGMSGGSESEEGMSGSEGG

MSGGGGSKSKSKKSKLKAKLGKKKGMSGGMSGSEEGMSGSEGGMSSGGGSKSKSKKSK

LKAKLGKKKGMSGGMSGSEEGMSGSEGGMSGGGGGKSKSRKSKLKAKLGKKKCMSGGM

SGSEGGMSGSEGGISGGGMSGGSGSKHKIGGGKHGGLGGKFGKKRGMSGSGGGMSGSE

GGVSGSEGSMSGGGMSGGSGSKHKIGGGKHGGLRGKFGKKRGMSGSEGGMSGSEGGMS
                ESGMSGSGGGKHKIGGGKHKFGGGKHGGGGGHMAE

Seq. nr. 2

Size: 1658 base pairs

Type: DNA

Name of the promoter: ProAtGRP17

Function: promoter


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3371      acaaagaaat taactatgaa acaatgcttt gtttaaatga agtaattaat
      3421 cggtactata gcgtatatac atagaatgga tccaatttaa ccaaagcaac
tgtatgtgac
      3481 tatgtgaatg attcaatcgt gagacattga aattgtcgtt tctccattac
ctttttggaa
      3541 gaaaaaccat cgaaagctag ctaagacttt ttttattaaa cgaacttgct
actatttcta
      3601 tgttttcttt gaaatgaaaa ttaaatttgt tactgtttca cctaaaactc
aaaagtattg
      3661 cttttttaatt ttattattaa gaaaaactaa tcttatttat gttaagaaac
ctgtcaattt
      3721 ttcattgtta atttcggctc tataattatt aattaacaat caatttctca
aaaattgcaa
      3781 tcatgattat gattagatat atattagttg gattgtgatg catttttgt
aatataaaat
      3841 ggatgtttgt attagtttct cactcatgta attaaacacc aaatgctaga
aactagtact
      3901 tttgtttctc agctctcgtc tattgttata tctgcaacac gaacaaaaac
cttatctagg
      3961 tgttatatat cacggttatg tttatgagtt agaagggatt cttcaacaaa
aatcacggaa
      4021 ctacttgtat atatgtatgt gtgtatccga tcgaggttga cttccggggt
tggacgttga
      4081 agaagacgaa ttcattgatt gggcttatat atgggcatgt attacttggt
tcaagtttgt
      4141 aacactttta gctttttcaa ttctattcga aaccaaaata ttgggctata
tatctttata
      4201 caaccttcaa gataaattgg accaatttta gaagagcaaa ttgaacccgg
ccgttagcgt
      4261 tagccaaacc ccaactcctt ttcagtacaa ttaaatcaag aatttctaat
aaatcgtgaa
      4321 tttctagaca tacatatcat aatttcgtca aagcgagcct acacctagtt
ttgagctaca
      4381 taactctttt cttttttttt ttatgattag gaggtttcaa aacccttgga
cccataattt
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4441 cttataatta gttttgtaat actaaattta ccattgagag cgacctctcg
tcactagtaa
4501 ttcgaagatc tcatattcat gacctatatt aaccatcttc cagtcaagta
atttcaatcg
4561 aaattcatca aaatcatata tttaacttag taatcacata tgatatggct
aatatacgta
4621 atataacgat aaagatttct tcacgctttg atattccata aagcaatgga
aatatggaat
4681 ggaagaaaac atttgaattt tacaagaaac aataaataga aggcctacaa
aacatgacaa
4741 cccacacaca cacacacgaa aagagaaaat ataaagaagg acatgtaacg
tgacgtagcg
4801 tagatctcca ttcactccaa tcgttttgca tggagcatgc atgtgtgtgt
accgtgcacg
4861 tagtagagac cacacaactc cttcataaaa gccctctctc tcttaccatc
accaaaacac
4921 aacaatccga tcagaaaat
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Seq. nr. 3

Size:

Type:

Name of the gene: RR1f

Function:

SEQ 3: Complete sequence of RR1f

5'ATA AAG CTT TTT CTC TGT TTT TGT CCG TGG AAC

Seq. nr. 4

Size:

Type:

Name of the gene: RR2r

Function:

SEQ 4: Complete sequence of RR2r

5'ATA CCA TGG CAC GTG ATT CGG TGG AAG TCC TGC C